

Notes on some Entedoninae (Hymenoptera, Chalcidoidea, Eulophidae) in Korea

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Abstract Twenty-six species of Entedoninae are reported, of which eight are new to Korea. One new specific synonymy is proposed: *Pleurotropis simiolus* Takahashi, 1932, syn. nov. of *Pediobius foveolatus* (Crawford, 1912).

Key words Hymenoptera, Chalcidoidea, Eulophidae, Entedoninae, Korea.

INTRODUCTION

This is the second report on the Korean Eulophidae. Twenty-six species, of which one unnamed, of the subfamily Entedoninae are enumerated in this report. Of these, eight species are newly recorded from Korea for the first time. One new specific synonymy is proposed.

SYSTEMATICS

1. *Pediobius occipitalis* Kerrich 1973 등근머리외줄좀벌 (신칭) [Fig. 1]

Pediobius occipitalis Kerrich, 1973, Bull. Br. Mus. nat. Hist. (Ent.), 29: 156–157; Kamijo, 1986, Kontyu, 54: 77–78.

Specimens examined. 1 ♀, 7.VII.1980; 1 ♀, 4.VII.1980; 1 ♀, 11.VIII.1982, Suweon, GG.

Host. Unknown [Japan–*Evetria cristata* (Walsingham), *Rhyacionia duplana* (Hübner) (Lep., Tortricidae), *Dioryctria splendidella* (Herrich-Schäffer) (Lep., Pyralidae), *Lissonota evetriae* Uchida, *Itoplectis cristatae* Iwata, *Temelucha* sp., (Hym., Ichneumonidae), *Bracon* spp., *Apanteles* sp. (Hym., Braconidae). Hongkong–*Dioryctria splendidella* (Herrich-Schäffer) (Lep., Pyralidae) (Kerrich, 1973). Thailand–*Rhyacionia cristata* Walsingham (Lep., Tortricidae) (Kerrich, 1973)].

Distribution. Korea (new record), Japan, Honkong, Thailand.

Remarks. This species is a primary or secondary gregarious endoparasite and very distinctive in the following characteristics; the occipital carina is absent on the vertex; apical segment of all tarsi very long, about equal in length to three preceding segments combined. It is new to Korea.

2. *Pediobius crassicornis* (Thomson, 1878) 구멍외줄좀벌 (신칭) [Fig. 2]

Pleurtropis crassicornis Thomson, 1878, Hym. Scand., 5: 255.

Pleurotropis howardii Crawford, 1910, Tech. Ser. Bur. Ent. U.S., 19: 23; Ishii, 1938, Kontyu., 12: 103 [howardi (sic !)].

Pediobius howardi (Thomson): Boucek & Askew, 1968, Palearctic Eulophidae, Index ent. Ins., p.94.

Pediobius crassicornis (Thomson): Boucek, 1965, Acta Ent. Mus. Nat. Pragae, 36: 40; Kamijo, 1977, Kontyu, 45: 15.

Specimens examined. 1♀, 25.V.1983, Chuncheon (Mt. Obong-san), GW; 1♀, 10.IX.1982, Seongnam, GG; 1♀, 1♂, 3.VIII.1982, Mt. Gaya-san, GB. Japan-1♂, 20.IX.1969, Mt. Hiko-san, Fukuoka Pref (K. Kamiya).

Host. Unknown [Japan-*Apanteles liparidis* (Bouché) (Hym., Braconidae); *Eulophus larvarum* (Linnaeus) (Hym., Eulophidae); *Caloptilia* sp. on *Epimedium grandiflorum* (Lep., Gracillariidae); (Kamijo, 1977); Europe-see Boucek & Askew, 1968]

Distribution. Korea (new record), Japan, Europe.

Remarks. This species is a primary or secondary parasite of various Lepidoptera, Hymenoptera, and their hymenopterous parasites. Its main distinguishing character is a distinct hole between the mid lobe of mesoscutum and the scutellum (Fig. 2). It appears to be somewhat related to *P. atamiensis* (Ashmead) and *foveolatus* (Crawford) but is easily distinguished from *atamiensis* by having the mid lobe of mesoscutum reticulate, with vague longitudinal striae posteriorly (in *atamiensis*, coarsely and strongly reticulate anteriorly and transversely reticulate posteriorly), and from *foveolatus* in having the distinct hole between the mesoscutum and scutellum. In addition, the latter species is much narrower, with the scutellum more coarsely sculptured and longitudinally striate on its anterior half. This species is new to the Korean list.

3. *Pediobius atamiensis* (Ashmead, 1904) 서호외줄좀벌 (신칭) [Fig. 3]

Pleurotropis atamiensis Ashmead, 1904, Jour. New York ent. Soc., 12: 160; Crawford, 1911, Proc. U. S. natn. Mus., 39: 619.

Pediobius atamiensis (Ashmead): Boucek & Askew, 1968, Palearctic Eulophidae, Index Ent. Ins., p. 90; Kamijo, 1977, Kontyu, 45: 16; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 258.

Specimens examined. 1♀, 19.IX.1973, Suweon, GG; 1♀, 7.X.1976, Gyechwado, JB; 5♀, 29.V. 1979, Mt. Sudo-san, GB.

Host. Unknown [Japan-*Euplectrus fukuii* Crawford; *Euplectrus bicolor* (Swederus) (Hym., Eulophidae) (Kamijo, 1977)]

Distribution. Korea, Japan.

Remarks. As in the preceding species, this species is rather easily recognized by the distinctive shape of the mid lobe of the mesoscutum. The main features of the mesoscutum, scutellum, and head are illustrated in fig. 3.

4. *Pediobius foveolatus* (Crawford, 1912) 무당외줄좀벌 (신칭) [Fig. 4]

Pleurotropis foveolatus Crawford, 1912, Proc. U.S. natn. Mus., 42: 7; Ferrière, 1933, Stylops, 2: 96.

Pleurotropis mediopuncta Waterston, 1915, Bull. ent. Res., 5: 345.

Pleurotropis epilachnae Rohwer, 1921, Ann. Mag. nat. Hist. (9), 7: 126; Ferrière, 1933, Stylops, 2: 96; Burks, 1966, Proc. ent. Soc. Wash., 68: 35; Baltazar, 1966, Pacific Insects Monogr., 8: 116.

Pleurotropis simiolus Girault: Nomen Nudum

Pleurotropis simiolus Takahashi, 1932, Jour. Tokyo Agric. College, 3: 56; Nakayama, 1940, Ann.

Agric. Expt. Stn. Gov.-Gen. Chosen, 11: 108. Syn. nov.

Pediobius foveolatus (Crawford): Kerrich, 1973, Bull. Br. Mus. nat. Hist. (Ent.), 29: 163-165; Tachikawa, 1976, Trans. Shikoku Ent. Soc., 13: 61.

Specimens examined. 10♀, 2♂, ex *E. vigintioctomaculata*, em. 7.IX.1983, Jingwan-ri, GG (H.Y. Han & J.H.Lee). Japan-6♀, 2♂, ex *E. vigintioctopunctata*, 20.VII.1954, Kurume, Fukuoka Pref. (K. Yasumatsu).

Host. *Epilachna vigintioctopunctata* (Fabricius), *Epilachna vigintioctomaculata* (Motschulsky) (Col., Coccinellidae).

Distribution. Korea, Japan, China, Oriental Region, Africa, Australia.

Remarks. The present species was reared from the ladybeetle *E. vigintioctomaculata* which is a commonest and well-known phytophagous ladybird and is very injurious to potatoes and egg-plants of Korea. This species is mainly parasitic to the *Epilachna* ladybeetles. In India, on the other hand, *P. foveolatus* attacks important aphidophagous coccinellid beetles such as *Coccinella septempunctata* Linnaeus and *Menochilus sexmaculata* (Fabricius) (Bhatkar & Subba Rao, 1976, Ent. Germ., 3: 242). According to Kerrich (1973), the African taxon *Pleurotropis mediopunctata* Waterston is a subspecies of *Pediobius foveolatus*.

Pleurotropis simiolus Girault is declared a nomen nudum because Girault failed to describe this species. Takahashi (1932), later citing *P. simiolus* Girault, gave detailed description of this species, thus resulting Takahashi a valid author.

5. *Pediobius pyrgo* (Walker, 1839) 외줄좀벌(신칭) [Fig. 6]

Entedon pyrgo Walker, 1839, Monogr. Chalciditum, 1: 118.

Eulophus pyralidum Audouin, 1842, Hist. Ins., Paris, p.1871.

Elachertus complaniusculus Ratzeburg, 1852, Ichneum. d. Forstins., 3: 218.

Pleurotropis (Rhopalotus) substrigosa Thomson, 1878, Hym. Scand., 5: 256.

Derostenus nawai Ashmead, 1904, Jour. New York ent. Soc., 12: 160.

Rhopalotus chalcidiphagus Szelenyi, 1957, Ann. Inst. Prot. Plant Hung., 7: 308.

Rhopalotus substrigosus Thomson: Dalla Torre, 1898, Cat. Hym., 5: 31; Schmiedeknecht, 1909, Genera Insectorum, 97: 444.

Pleurotropis nawai (Ashmead): Muesebeck & Dohanian, 1927, Bull. U.S. Dept. Agr., 1487: 31; Nakayama, 1942, Ann. Agric. Expt. Stn. Gov.-Gen. Chosen, 13: 84.

Pleurotropis complaniusculus Ratzeburg: Bukowski, 1938 Ent. Obozr., 27: 166.

Pediobius nawai (Ashmead): Burks, 1958, U.S. Dept. Agr., Agr. Monogr., 2, Suppl., 1: 68; Burks, 1966, Proc. ent. Soc. Wash., 68: 33; Peck, 1963, Can. Ent. Suppl., 30: 228.

Entedon sp., Paik, 1978, Korean J. Pl. Prot., 17: 178 (Misidentified).

Pediobius pyrgo (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 189; Russo & Viggiani, 1963, Boll. Lab. Ent. Agr. Filippo Silvestri, 21: 218; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 45; Priore & Viggiani, 1965, Boll. Lab. Ent. agr. Filippo Silvestri, 23: 30; Boucek & Askew, 1968, Palearctic Eulophidae, Index ent. Ins., p.97; Kamijo, 1977, Kontyu, 45: 12; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 258.

Specimens examined. 4♀, ex *Macrocentrus* sp., em. 7.VII.1980, Pyeongtaek, GG: 1♀, 1♂, 21.VIII.1977, reared from unidentified Tortricidae, Suweon, GG; 2♀, 2♂, 8.V.1980, reared from unidentified lepidopteran pupa, Suweon, GG; 14♀, 8♂, ex *Illiberis pruni* Dyar, em. 12.VII.1983; 3♂, 16.V.1980, 1♀, 6.VII.1983, Suweon, GG; 1♀, 16.IX.1982, 6♂, Mt. Baikbong-san, GG; 1♂,

Namhansanseong, GG; 1♂, 1.IX.1982, 1♂, 9.IX.1982, Geumgok, GG; 1♂, 25.V.1983, Chuncheon (Mt. Obong-san), GW.

Host. *Macrocentrus* sp. (Hym., Braconidae); *Illiberis pruni* Dyar (Lep., Zygaenidae); *Archips* sp. (Lep., Tortricidae). *Brachmia macroscopa* Meyrick [= *B. triannulella* (Herrich-Schäffer) (Lep., Gelechiidae) (Nakayama, 1942)].

Distribution. Korea, Japan, Europe, North America.

Remarks. Common species. It is a primary or secondary, solitary or gregarious, larval or pupal endoparasite of various families, mainly Lepidoptera, and their hymenopterous parasites (Boucek & Askew, 1968; Kamijo, 1977). The life-cycle and other important information on this species are discussed by Russo & Viggiani (1963).

6. *Pediobius saulius* (Walker, 1839) 민무늬외줄좀벌(신칭) [Fig. 5]

Entedon saulius Walker, 1839, Monogr. Chalciditum, 1: 115.

Entedon linus Walker, 1839, Monogr. Chalciditum, 1: 119–120.

Eulophus obscuripes Ratzeburg, 1844, Ichneum. d. Forstins., 1: 165.

Pleurotropis strigiscuta Thomson, 1878, Hym. Scand., 5: 254.

Pediobius grandii Ferrière, 1953, Boll. Ist. Ent. Univ. Bologna, 19: 165–166.

Pleurotropis obscuripes var. *laeta* Erdős, 1956, Folia ent. hung., (s.n.), 9: 40–41.

Pleurotropis obscuripes (Ratzeburg): Bukowski, 1938, Ent. Obozr., 27: 165.

Pediobius linus (Walker): Delucchi, 1958, Entomophaga, 3: 260–261.

Pediobius saulius (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 189; Viggiani, 1963, Boll. Lab. ent. agr. Portici, 21: 34–39; Viggiani, 1964, ibidem, 22: 217–242; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 34; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.98–99; Kamijo, 1986, Kontyu, 54: 72–73.

Specimens examined. 1♀, 1♂, ex *Phyllonorycter ringoniella*, em. 6.XI.1977, Suweon, GG; 1♀, 20.VI.1978, reared from unidentified leaf-miners on *Alnus japonica*, Suncheon, JN; 1♀, 25.V.1983, Chuncheon (Mt. Obong-san), GW; 1♀, 30.V.1979, Mt. Sudo-san, GB.

Host. *Phyllonorycter ringoniella* (Matsumura) (Lep., Gracillariidae).

Distribution. Korea (new record), Japan, Europe, Israel, USSR (Kazakhstan SSR).

Remarks. *Pediobius saulius* can be distinguished by the following characters: Forewing with cubital vein absent and speculum open below; lateral corners of pronotum strikingly prominent; sculpture of thorax unusual (Fig. 5), unlike that of any other palearctic species of the genus, except *italicus* Boucek. *P. saulius* is distinguished from *italicus* by the much longer abdomen in the female and by the sculpture of the thorax. In *italicus*, first gastral tergite of the female exceeds the middle of the gaster, the mesoscutum is reticulate all over and the scutellum is coarsely striate. In *saulius*, the female gaster is ovate-acuminate, with first gastral tergite hardly reach the middle of the gaster; the mesoscutum is transversely striate anteriorly; and the scutellum is longitudinally striate.

P. saulius attacks leaf-miners and their hymenopterous parasites. The species is newly recorded from Korea.

7. *Pediobius mitsukurii* (Ashmead, 1904) 팔랑외줄좀벌(신칭) [Figs. 7, 8]

Derostenus mitsukurii Ashmead, 1904, Jour. New York ent. Soc., 12: 161.

Pleurotropis mitsukurii (Ashmead): Crawford, 1910, Tech. Ser. Bur. Ent. U.S., 19: 22.

Pediobius mitsukurii (Ashmead): Boucek & Askew, 1968, Palearctic Eulophidae, Index ent. Ins., p.

95; Kamiyo, 1977, Kontyu, 45: 20.

Specimens examined. 23 ♀, ex *Parnara guttata*, em. 29.VIII.1979. Yeongdong, CB. Japan—1 ♀, 2. X.1972, Fukuoka, Fukuoka Pref. (C. Okuma).

Host. *Parnara guttata* Bremer & Grey (Lep., Hesperidae).

Distribution. Korea (new record), Japan.

Remarks. This species is a gregarious pupal parasite. It is quite distinct from the other members of the genus *Pediobius* in the pale legs, the shape of propodeum and the large first tergite. For the other main features, see Kamiyo (1977) and figures (Figs. 91, 92). *P. mitsukurii* is newly recorded from Korea.

8. *Pediobius flaviscapus* (Thomson, 1878) 노랑외줄좀벌 (신칭) [Figs. 10, 11]

Pleurotropis flaviscapus Thomson, 1878, Hym. Scand., 5: 225.

Pediobius flaviscapus (Thomson): Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 19; Kamiyo, 1986, Kontyu, 54: 77.

Specimens examined. 1 ♀, 24.VI.1980, Mt. Seolak-san, GW; 1 ♂, 10.IX.1982, Seongnam (Namhansanseong), GG. Japan—1 ♀, 5.VI.1964. Mitsune, Hachijo Island (Y. Hirashima & M. Shiga).

Host. Unknown.

Distribution. Korea, Japan, Europe.

Remarks. The material studied agrees well with the redescription of Boucek (1965). This species is separated from related species by the yellow scape and legs (except coxae) and the distinctively shaped propodeum with acutely protruding supracoxal angulations.

9. *Pediobius orientalis* (Crawford, 1910) 동양외줄좀벌 (신칭) [Fig.9]

Pleurotropis orientalis Crawford, 1910., Tech. Ser. Bur. Ent. U.S., 19: 23.

Pediobius orientalis (Crawford): Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p. 96; Kamiyo, 1977, Kontyu, 45: 18.

Specimens examined. 1 ♀, 3.VII.1982, Mt. Gaya-san, GN; 2 ♀, 21.VI.1980, 1 ♀, 5.VII.1980, 2 ♀, 17.VII.1980, 1 ♀, 13.IX.1980, Suweon, GG; 1 ♀, 17.IX.1980. Mt. Cheonma-san, GG.

Host. Unknown.

Distribution. Korea (new record), Japan

Remarks. This species is most similar to *P. moldavicus* Boucek in having the legs pale. Other characters are given by Kamiyo (1977).

P. orientalis is primary or secondary parasite (Kamiyo, 1977) and it is newly recorded from Korea.

10. *Pediobius moldavicus* Boucek, 1965 황다리의줄좀벌 (신칭) [Figs. 12]

Pediobius moldavicus Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 39; Kamiyo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 258.

Specimens examined. 1 ♀, 9 ♂, 20.V.1980; 1 ♀, 25.V.1980; 1 ♂, 13.IX.1980; 3 ♀, 3 ♂, 11.VII.1982, Suweon, GG; 1 ♀, 6 ♂, 7.VIII.1982, Gwangneung, GG; 1 ♂, 22.IX.1982, Mt. Cheonma-san, GG; 1 ♀, 3.VIII.1982, Mt. Gaya-san, GN; 3 ♀, 2 ♂, 31.V.1979, Mt. Sudo-san, GB; 1 ♀, 18.VII.1983,

Haenam (Mt. Duryun-san), JN. Japan—1 ♀, 21.VII.1969. Mt. Hiko, Fukuoka Pref. (K. Kanmiya).

Distribution. Korea, Japan, Eruope.

Remarks. The biology of *P. moldavicus* is unknown. It is one of several Palaearctic species that are rather distinctive in having the antennal scape and all femora and tibiae pale testaceous. It differs from the others in having the gastral petiole subquadrate and the notaular depressions reticulate and not delimited. For other characters, see Boucek (1965).

11. *Pediobius longicornis* (Erdos, 1954) 긴외줄좀벌 (신칭) [Figs. 16]

Pleurotropis longicornis Erdős, 1954, Ann. hist.-nat. Mus. Hung., (s.n.), 5: 351.

Pediobius epeus (Walker): Boucek, 1965, Acta ent. Mus. nat. Praga, 36: 20–22 (misidentification).

Pediobius longicornis (Erdős): Kamiyo, 1986, Kontyu, 54: 76.

Specimens examined. 1 ♂, 31.V.1979, Mt. Sudo-san, GB; 1 ♀, 2 ♂, 16.IX.1982, Mt. Cheonma-san, GG; 1 ♀, 19.IX.1982, Seongnam, GG; 1 ♀, 22.V.1983, Mt. Suri-san, near Suweon, GG; 1 ♀, 24.VI.1981, Mt. Seolak-san, GW. Japan—1 ♀, 20.VI.1969, 1 ♀, 1.VIII.1968, Mt. Hiko-san, Fukuoka Pref. (K. Kanmiya); 1 ♀, 1.VI.1964, Nakanogo, Hachijo Island (Y. Hirashima & M. Shiga).

Host. Unknown.

Distribution. Korea, Japan, Europe, Mongolia.

Remarks. *P. longicornis* is similar to *P. epeus* (Walker) and *regulus* Kamiyo. The other characters, see Kamiyo (1986).

12. *Pediobius cuneatus* Kamiyo, 1983 흑살이외줄좀벌 (신칭) [Figs. 13]

Pediobius cuneatus Kamiyo, 1983, Kontyu, 51: 460–462.

Specimens examined. 11 ♀, 2 ♂, 13.VI.1980, reared from cynipid leaf galls on *Quercus* sp., Suweon, GG; 4 ♀, 9 ♂, 5.VIII.1980, Suweon, GG; 1 ♀, 28.V.1979, Mt. Sudo-san, GB. Japan—1 ♀, 28.IV.1973, Kamiozoegawa, Fuji, Saga Pref. (K. Yamagishi).

Host. Cynipidae (Hymenoptera) on *Quercus* sp.

Distribution. Korea (new record), Japan.

Remarks. I compared the Korean materials with the *cuneatus* holotype and found good agreement. The species differs from related ones in having the gaster of the female longer and the posterior margin of mid lobe of the mesoscutum distinctly emarginate and separated by a groove from the base of the scutellum. It is newly recorded from Korea.

13. *Pediobius foliorum* (Geoffroy, 1785) 주걱외줄좀벌 (신칭) [Figs. 14, 15]

Cynips foliorum Geoffroy in Fourcroy, 1785, Ent. Paris, 2: 388.

Elachertus cothurnatus Nees, 1834, Hym. Ichneum. aff. Monogr., 2: 141.

Elachertus gradualis Nees, 1834, Hym. Ichneum. aff. Monogr., 2: 142.

Entedon argon Walker, 1839, Monogr. Chalciditum, 1: 101–102.

Chrysocharis kraussei Wolff, 1916, Ent. Mitt., 5: 278–280.

Rhopalotus cothurnatus (Nees): Foerster, 1856, Hym. Studien, 2: 80.

Rhopalotus gradualis (Nees): Foerster, 1856, Hym. Studien, 2: 80.

Pleurotropis (*Rhopalotus*) *cothurnata* (Nees): Thomson, 1878, Hym. Scand., 5: 255–256.

Pediobius argon (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 190.

Pediobius cothurnatus (Nees): Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 29; Boucek, 1970, Mem. Soc. Ent. Italiana, 49: 94; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.91.

Pediobius foliorum (Geoffroy): Boucek, 1977, Acta ent. Jugosl., 13 (Suppl.): 111, 125; Boucek & Graham, 1978 in Kloet & Hincks, A check list of British insects, 4, Hym., p.104; Kamijo, 1986, Kontyu, 54: 70.

Specimens examined. 2♀, 20.V.1980, Suweon, GG.

Host. Unknown [Europe—*Eulophus larvarum* (Linnaeus) (Hym., Eulophidae)].

Distribution. Korea (new record), Japan, Europe, Canada.

Remarks. In Europe and Canada, *P. foliorum* is known as a secondary parasite of lepidopterous larvae via their gregarious parasites of the genus *Eulophus*. It is rather distinct from other known Palaearctic species of the genus in having an inflated antennal club and step-like propodeal plicae. The species is newly recorded from Korea.

14. *Pediobius claviger* (Thomson, 1878) 청암외줄좀벌(신칭)

Pleurotropis clavigera Thomson, 1878, Hym. Scand., 5: 256.

Pediobius claviger (Thomson): Boucek, 1965, Acta ent. Mus. natn. Pragae, 36: 33–34; Kamijo, 1986, Kontyu, 54: 70–71.

Host. Unknown.

Distribution. Korea, Japan, Europe.

Remarks. This species was reported from Korea by Kamijo (1986), but additional Korean material has not been found.

15. *Pediobius facialis* (Giraud, 1863) 어리외줄좀벌(신칭) [Figs. 17, 18]

Pleurotropis facialis Giraud, 1863, Verh. zool.-bot. Ges. Wien, 13: 1272.

Pediobius albae Erdős, 1961, Ann. hist.-nat. Mus. natn. hung. zool., 53: 485; Graham, 1963, Trans. Soc. Brit. ent., 15: 200.

Pediobius facialis (Giraud): Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 52; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins. p.93; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 258; Kamijo, 1986, Kontyu, 54: 71.

Specimens examined. 9♀, 8♂, ex *O. hemiplaca*, em. 20.V.1979, 14♀, 10♂, ex *O. hemiplaca*, em. 25.VI.1979, Suweon, GG.

Host. *Olethreutes hemiplaca* (Meyrick) (Lep., Tortricidae).

Distribution. Korea, Japan, Southern Siberia, Europe, North America.

Remarks. This species is a primary or rarely secondary, gregarious, pupal, endoparasite of various lepidopterous insects and their hymenopterous parasites. This species has been reared from the pupae of *O. hemiplaca* in Korea.

16. *Pediobius brachycerus* (Thomson, 1878) 거미외줄좀벌(신칭) [Figs. 19]

Pleurotropis (Rhopalotus) brachycerus Thomson, 1878, Hym. Scand., 5: 257.

Pleurotropis aquatica Erdős, 1954, Ann. hist.-nat. Mus. natn. hung., (s.n.), 5: 350.

Pediobius brachycerus (Thomson): Graham, 1959, Trans. soc. brit. Ent., 13: 189; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 56–58; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent.

Ins., p.90; Kamijo, 1986, Kontyu, 54: 71–72.

Specimens examined. 1♀, 28.V.1979, Mt. Seolak-san, G W; 1♀, 26.VI.1983, Chuncheon (Mt. Obong-san), G W; 2♀, 24.VIII.1974, Suweon, GG. Japan-1♀, 24.VI.1969, Mt. Inunaki-san, Fukuoka Pref. (O. Yata).

Host. Unknown [Europe-hyperparasite of spider eggs].

Distribution. Korea (new record), Japan, Europe, Canada.

Remarks. In Europe, *P. brachycerus* is a known larval endoparasite of Hymenoptera in egg sacs of spiders. The Korean specimens agree well with the redescription of Boucek (1965). Newly recorded from Korea.

17. *Pediobius iwatai* Kamijo, 1983 꼬마외줄좀벌 (신칭) [Figs. 20, 21]

Pediobius iwatai Kamijo, 1983, Kontyu, 51: 462–463.

Pediobius sp. No.3 & sp. no. 4: Iwata & Tachikawa, 1966, Trans. Shikoku ent. Soc., 9: 5.

Specimens examined. 1♂, 11.VIII.1982, Suweon, GG; 1♂, 22.VII. 1982, Mt. Baikbong-san, GG; 1♀, 3.VIII.1982, Mt. Gaya-san, GN; 1♀, 29.V.1979, Mt. Sudo-san, GB; 1♀, 18.VI.1983, Haenam (Mt. Duryun-san), JN. Japan-1♀, 25.X.1973, Kamiozoegawa, Fuji, Saga Pref. (K. Yamagishi).

Host. Unknown [Japan-*Lema honorata* Baly, *Lilioceris merdigera* (Linnaeus) (Col., Chrysomalidae) (Kamijo, 1983)].

Distribution. Korea, Japan.

Remarks. I examined the type series from Dr. Kamijo's collection. The Korean specimens studied agree well with the holotype.

18. *Pediobius fastigatus* Kamijo, 1983 가야외줄좀벌 (신칭) [Figs. 22, 23]

Pediobius fastigatus Kamijo, 1983, Kontyu, 51: 456–467.

Pediobius sp. C., Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 256.

Specimens examined. 2♀, 29.V.1979, Mt. Sudo-san, GB.

Host. Unknown.

Distribution. Korea, Japan.

Remarks. The Korean material studied agrees well with the holotype. *P. fastigatus* is rather easily distinguished from related species by the deep, groove-like notauli and the weakly margined occiput.

19. *Pediobius termerus* (Walker, 1839) 북방외줄좀벌 (신칭)

Entedon termerus Walker, 1839, Monogr. Chalciditum, 1: 96.

Entedon nephthe Walker, 1839, Monogr. Chalciditum, 1: 107.

Horismenus clinus Walker, 1844, Ann. Mag. Nat. Hist., 14: 408.

Entedon clinus (Walker): Walker, 1848, List Hym. brit. Mus., 2, Chalcidites, p.140.

Pediobius termerus (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 190; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 26; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 258.

Host. Unknown.

Distribution. Korea, Japan, Europe.

Remarks. This species appears most distinctive among species of *pediobius* in having the posterior

two-thirds of the notauli deeply furrowed. It was reported from North Korea by Kamijo (1979), but additional Korean material has not been found.

20. *Pediobius acantha* (Walker, 1839) 가시외줄좀벌(신칭) [Figs. 24, 25]

Entedon acantha Walker, 1839, Monogr. Chalciditum, 1: 107.

Entedon amyntas Walker, 1839, Monogr. Chalciditum, 1: 111.

Entedon caenus Walker, 1839, Monogr. Chalciditum, 1: 113.

Heptomerus caeruleonitens Rondani, 1877, Boll. soc. ent. ita., 9: 183.

Pleurotropis brevicornis Thomson, 1878, Hym. Scand., 5: 253.

Pediobius acantha (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 191; Graham, 1969, Trans. Soc. Brit. Ent., 15: 202; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36: 67; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.88; Kerrich, 1973, Bull. Br. Mus. nat. Hist. (Ent.), 29: 159; Kamijo, 1978, Kontyu, 46: 462; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 257.

Specimens examined. 8♀, 2♂, ex *P. horticola*, em. 25.V.1979, 2♀, 1♂, 7.VIII.1982, Gwangneung, GG; 2♀, 1♂, Mt. Weolak-san, CB; 1♀, 26.VI.1983, Chuncheon (Mt. Samak-san), GW; 1♀, 25.V.1983, Chuncheon (Mt. Obong-san), GW; 1♀, 3.VII.1982, Mt. Gaya-san, GN; 1♂, 29. IX.1980, Gimcheon (Temple Jikjisa), GB; 1♀, 1♂, 21.VII.1984, Cheongyang (Mt. Chilkap-san), CN; 3♀, 27.VII.1984, Seogwipo, JJ. Japan. -1♀, 16.X.1969, Mt. Hiko-san, Fukuoka Pref. (K. Kanmiya); 1♂, 2.VI.1964, Hachijo Island Y. Hirashima & M. Shiga); 4♀, 1♂, 8.VI.1978, Mt. Tachibana-yama-san, Fukuoka, (K. Sahad); 1♀, 10.VII.1973, Kamiozoegawa, Fuji, Saga Pref. (K. Yamagishi).

Host. *Phytomyza horticola* Gourea (Dipt., Agromyzidae).

Distribution. Korea, Japan, India, Pakistan, Iraq, Europe, North America, New Zealand(Introduced).

Remarks. *P. acantha* is mainly a primary, rarely secondary, solitary, larval or pupal endoparasite of various leaf-mining Lepidoptera, Diptera, and Hymenoptera. For other hosts see Boucek (1965), Boucek & Askew (1968) and Peck (1985).

21. *Pediobius eubius* (Walker, 1838) 백두간의줄좀벌(신칭)

Entedon eubius Walker, 1839, Monogr. Chalciditum, 1: 109.

Elachertus angularis Foerster, 1841, Beitr. Monogr. Pterom., p.40.

Pleurotropis nitifrons Thomson, 1878, Hym. Scand., 5: 252; Dalla Torre, 1898, Cat. Hym., 5: 30 [nitidifrons, (sic!)].

Pediobius eubius (Walker): Graham, 1959, Trans. Soc. Brit. Ent., 13: 190; Graham, 1963, Trans. Soc. Brit. Ent., 15: 201; Rosen, 1959, Ent. Tidskr., 80: 165; Viggiani, 1964, Boll. Lab. Ent. Agr. Fillipo Silvestri Portici, 22: 212-213; Boucek, 1965, Acta ent. Mus. nat. Pragae, 36-76; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.93; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 257; 1986, Kontyu, 54: 402; Peck, 1985, Can. Ent., 117: 682; Dawah, 1988, Jour. Nat. Hist., 22: 1164-65.

Host. Unknown [England-Eurytomidae (Hymenoptera) (Dawah, 1988)].

Distribution. Korea, Japan, Europe, Mongolia, Afghanistan, Canada.

Remarks. *P. eubius* was reported from North Korea by Kamijo (1979), but additional Korean material has not been found.

22. *Mestocharis maculata* (Foerster, 1841) 점박이민좀벌 (신칭)

Eulophus maculatus Foerster, 1841, Beitr. Monogr. Pterom., 1: 41.

Pleurotropis maculata (Foerster): Erdős, 1956 Folia ent. hung., (s.n.), 9: 38.

Mestocharis maculata (Foerster): Boucek, Graham & Kerrich, 1963, Entomologist, 96: 9; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.101; Kamiyo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 259.

Specimens examined. 5♀, 1♂, 3.VII.1982, Mt. Gaya-san, GN; 6♀, 3♂, 22.IX.1982, 4♀, 3.X. 1982, Mt. Cheonma-san, GG; 1♀, 17.IX.1982, Mt. Baikbong-san, GG; 1♀, 4.VI.1982, Mt. Yongmun-san, GG.

Host. Unknown.

Distribution. Korea, Europe.

Remarks. The specimens studied agree well in most respects with the description of *maculata* given by Boucek et al (1963), but their gaster is sculptured as in *M. bimaculatus* (Dalman). The propodeum is slightly rugose.

23. ? *Parahorismenus* sp.

Distinctive species, chiefly characterized by the fuscous wings and punctate scutellum with numerous long hairs laterally. Unfortunately, only one female is known. Therefore, no specific name is provided here.

Partial description as follows: Body blackish-blue with purplish luster, except first three tarsal segments white; fore and hind wings fuscous, except distally.

Frontovertex and frons densely piliferous-punctate, with interspaces smooth; median groove slightly indicated; OOL slightly longer than lateral ocellus, the latter separated from occipital edge by half their maximal diameter. Malar space much longer than breadth of scape, scape slender, reaching level of upper margin of antennal scrobes, 5 times as long as broad; pedicel plus flagellum slightly shorter than breadth of head. Pronotal collar rather sharply margined, with a row of long hairs arising behind elevated margin; sides of collar weakly diverging posteriorly. Mid lobe of mesoscutum rugulose, densely hairy, with large puncture in the middle. Side lobe rather smooth, apical margin crenulated. Axillae densely hairy. Scutellum densely hairy laterally, punctate, with a crenulate longitudinal median groove. Median area of propodeum smooth, with a pair of hairs on each side of median carina; spiracular area convex; many hairs below the small elongated spiracles; callus densely hairy.

Petiole transverse, nearly smooth. Gaster rounded, as long as thorax, first tergite smooth, with sparse hairs laterally; following tergites densely hairy.

Male. Unknown.

Specimens examined. 1♀, 22.IX.1982, Mt. Cheonma-san, GG.

Host. Unknown.

Distribution. Korea (New record)

24. *Pleurotroppopsis japonica* (Kamiyo, 1977) [Figs. 27] 가늘나방살이민좀벌 (신칭)

Cotterellia japonica Kamiyo, 1977, Kontyu, 45: 257; Kamiyo, 1979, Ann. hist.-nat. Mus. natn. hung.,

71: 259.

Pleurotroppopsis japonica (Kamijo): Boucek, 1988, Australasian Chalcidoidea, p.711; Kamijo, 1990, Jpn. J. Ent., 58: 817.

Specimens examined. 1♀, 1♂, ex *Phyllonorycter* sp. on *Quercus*, em. 14.III.1977, Suweon, GG; 1♀, 1♂, ex Agromyzidae on *Populus gladulosa*, em. 28.IX.1980, Suweon, GG; 3♀, 2♂, ex *P. ringoniella*, em. 28.X.1983, Suweon, GG; 1♀, 1♂, reared from leaf miners on *Acer*, em. 16.VIII.1980, Cheongsong (Mt. Juwang-san), GB; 2♂, ex Agromyzidae on *Lespedeza*, em. 28.VIII.1980, Gongju, CN; 1♀, 12.VI.1979, Suweon, GG; 2♀, 13.VIII.1980, Mt. Seolak-san, GW; 1♂, 17.VIII.1982, Milyang, GN; 2♀, 26.VI.1983, Chuncheon (Mt. Samak-san), GW; 1♀, 22.IX.1982, Mt. Cheonma-san, GG.

Host. *Phyllonorycter ringoniella* (Matsumura) (Lep., Gracillariidae); Agromyzidae (Diptera) on *Populus gladulosa* and *Lespedeza* sp.

Distribution. Korea, Japan.

25. *Pleurotroppopsis tischeriae* (Kamijo, 1977) 굴나방살이민좀벌 (신칭)

Cotterellia tischeriae Kamijo, 1977, Kontyu, 45: 258; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 259.

Pleurotroppopsis tischeriae (Kamijo): Boucek, 1988, Australasian Chalcidoidea, p.711.

Specimens examined. 1♂, ex *Tischeria quercifolia*, em. 13.VII.1977, Suweon, GG.

Host. *Tischeria quercifolia* Kuroko (Lep., Tischeriidae).

Distribution. Korea, Japan.

Remarks. *P. tischeriae* is rather easily distinguished from other *Pleurotroppopsis* species in having mesoscutum densely hairy, the upper margin of the antennal scrobes strongly produced anteriorly, the basal half of the scape whitish, and the male funicle 4-segmented. For additional differences, see Kamijo (1977).

26. *Derostenus punctiscuta* Thomson, 1878 [Figs. 26] 털머리좀벌 (신칭)

Derostenus punctiscuta Thomson, 1878, Hym. Scand., 5: 261; Boucek & Askew, 1968, Palaearctic Eulophidae, Index ent. Ins., p.102; Kamijo, 1979, Ann. hist.-nat. Mus. natn. hung., 71: 259; Hansson, 1986, Ent. scand., 17: 315-317.

Specimens examined. 1♂, 5.VIII.1980, Suweon, GG. Japan-1♂, 16.VI.1973, Kamiozoegawa, Fuji, Saga Pref. 9K. Yamagishi).

Host. Unknown [Europe-*Stigmella* spp. (Lep., Nepticulidae) (Hansson, 1986)].

Distribution. Korea, Japan, Europe.

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EXPLANATION OF THE FIGURES

- Fig. 1. *Pediobius occipitalis* Kerrich, Head & thorax.
 Fig. 2. *Pediobius crassicornis* (Thomson), Head & thorax.
 Fig. 3. *Pediobius atamiensis* (Ashmead), Head & thorax.
 Fig. 4. *Pediobius foveolatus* (Crawford), Thorax.
 Fig. 5. *Pediobius saulius* (Walker), Head & thorax.
 Fig. 6. *Pediobius pyrgo*(Walker), Thorax & gaster.
 Fig. 7. *Pediobius mitsukurii* (Ashmead), Thorax.
 Fig. 8. *Pediobius mitsukurii* (Ashmead), Part of thorax & gaster.
 Fig. 9. *Pediobius orientalis* (Crawford), Head & thorax.
 Fig. 10. *Pediobius flaviscapus* (Thomson), Head & thorax.
 Fig. 11. *Pediobius flaviscapus* (Thomson), Propodeum & gaster.
 Fig. 12. *Pediobius moldavicus* Boucek, Part of thorax & 1st tergite.
 Fig. 13. *Pediobius cureatus* Kamijo, Thorax.
 Fig. 14. *Pediobius foliorum* (Geoffroy), Head & thorax.
 Fig. 15. *Pediobius foliorum* (Geoffroy), part of thorax & gaster.
 Fig. 16. *Pediobius longicornis* (Erdos), Thorax & gaster.
 Fig. 17. *Pediobius facialis* (Giraud), Head & thorax.
 Fig. 18. *Pediobius facialis* (Giraud), Propodeum & gaster.
 Fig. 19. *Pediobius bracycerus*(Thomson), Thorax.
 Fig. 20. *Pediobius iwatai* Kamijo, Head & thorax.
 Fig. 21. *Pediobius iwatai* Kamijo, Propodeum & gaster
 Fig. 22. *Pediobius fastigatus* Kamijo, Thorax.
 Fig. 23. *Pediobius fastigatus* Kamijo, Gaster.
 Fig. 24. *Pediobius acantha* (Walker), head & thorax
 Fig. 25. *Pediobius acantha* (Walker), Propodeum & gaster
 Fig. 26. *Derostenus punctiscuta* Thomson, Head & thorax.
 Fig. 27. *Pleurotropopsis japonica* (Kamijo), Thorax

한국産 민좀벌亞科 (벌目: 좀벌科) I

白 種 哲

順天大學校 農生物學科

한국産 좀벌亞科를 정리한 결과 총 26종이 분류·동정되었으며 이중 8종은 한국 未記錄種이었다. 또한 *Pleurotropis simiolus* Takahashi, 1932는 *Pediobius foveolatus* (Crawford, 1912)의 synonym으로 처리하였다.

검색어: 分類, 벌目, 좀벌科, 민좀벌亞科

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